

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, December 2020

Course Name: B.Tech. APE-UP	Semester: VI
Program: Formation Evaluation & Well Logging	Time: 3 hrs.
Course Code: PEAU 3020	Max. Marks: 100
Nos. of page(s) 2	

SECTION A
Attempt all questions
Maximum 60 words for each answer

S. No.		Marks	CO
Q 1	Write short note on Caliper Logging.	5	CO3
Q.2	State the applications of drilling fluid in well logging. Define Transit Time.	5	CO2
Q.3	Write the applications of K-Th cross plot analysis.	5	CO5
Q.4	Write the steps of Sonic log tool calibration.	5	CO1
Q.5	Provide the names of well logs used in both open and cased hole well analysis.	5	CO6
Q.6	What is the main application of Photo Electric logging?	5	CO3

SECTION B
Attempt all questions
Maximum 200 words for each answer

Q.7	Write short Notes on any two- I- Sonic Porosity II- Micro resistivity tool III- Temperature Log	10 (5+5)	CO3
Q.8	Describe the parameters of downhole well environment with their standard symbols.	10 (5+5)	CO2
Q.9	Summarize the steps of porosity calculations with the help of log interpretation flow chart for mono-mineral lithological formation.	10	CO6
Q.10	Construct the model of primary interaction with atom. What is gamma ray logging? Explain the Gamma Ray primary interaction with atom.	10 (4+6)	CO4
Q. 11	What is Spontaneous Potential? What causes the SP voltage? Explain applications of SP Log and effect of bed thickness on SP. Or Differentiate the LSS and BHC tools with help of their design and mechanism of data collection.	10 (6+4)	CO4

SECTION-C
Maximum 500 words

Q.12	<p>What is Neutron log? Explain it with the help of its principle, neutron interaction with matter, neutron energy classification; and draw a rough neutron curve for hydrocarbon bearing sandstone formation that is sandwiched by shale.</p> <p style="text-align: center;">Or</p> <p>(a) In a clean hydrocarbon-bearing sandstone formation, the neutron and density logs read 10 and 38 sandstone porosity units, respectively. The shallowest resistivity reading is 10 ohm-m across the hydrocarbon-bearing formation and the resistivity of mud filtrate at the temperature of the formation is 0.075 Ohm-m. The residual hydrocarbon saturation in the flushed zone is 0.65. What is the in situ hydrocarbon density? Estimate the effective porosity of the formation. Assume that $a=0.81$, m and $n = 2$ in Archie's equation.</p> <p>(b) Calculate the porosity and oil saturation if Bulk density, matrix density and fluid density is observed from a well : 2.5 gm/cc, 2.7 gm/cc and 0.95 gm/cc respectively. $m=2$, $n=2$, $a=1$, $R_w = 0.08$ ohmm and $R_t = 150$ ohmm.</p>	<p style="text-align: center;">20 (5+5+5+5)</p> <p style="text-align: center;">Or</p> <p style="text-align: center;">(10+10)</p>	CO5
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